DOCUMENT RESUME

ED 100 558 RC 008 248

AUTHOR Cordes, Sam M.; Barkley, Paul W.
TITLE Physicians and Physician Services in Rural Washington. Bulletin No. 790.
INSTITUTION Washington State Univ., Pullman. Washington Agricultural Experiment Station.
SPONS AGENCY Department of Agriculture, Washington, D.C.
REPORT NO WAES-Bull-790
PUB DATE Jan 74
NOTE 17p.

EDRS PRICE MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS Age; *Group Structure; *Individual Characteristics; *Medical Services; Opinions; Organizational Effectiveness; *Physicians; Productivity; *Rural Areas; Rural Urban Differences; Tables (Data)
IDENTIFIERS *Washington

ABSTRACT

In response to Washington rural residents concerned about availability and distribution of health care, a study was conducted to: (1) better understand the physicians serving rural Washington and (2) determine if their services could be increased by taking physicians out of their traditional solo practitioner roles and placing them in groups of 2, 3, or 4 doctors. All rural physicians were screened to isolate those whose practice was in a rural community of no more than 10,000 population, not more than 15 miles from a hospital, and staffed only by general practitioners. Forty-one physicians in 17 practices (5 solo practitioners and 4 practices of 2-man, 3-man, and 4-man groups) in 15 communities throughout Washington were interviewed between November 1971 and April 1972. They were asked about medical care in rural Washington, group practice, and the business organization and economic productivity of their practices. Some findings were: (1) Washington's rural areas had fewer physicians per capita than its urban areas; (2) there were hospitals without doctors; (3) many rural towns had physicians reaching ages when retirement or semiretirement is inescapable; (4) rural residents often resided many miles from the closest physician; and (5) more suggestions were made for improving medical care by increasing the number of personnel rather than reorganizing the present personnel into different types of practice arrangements. (NQ)

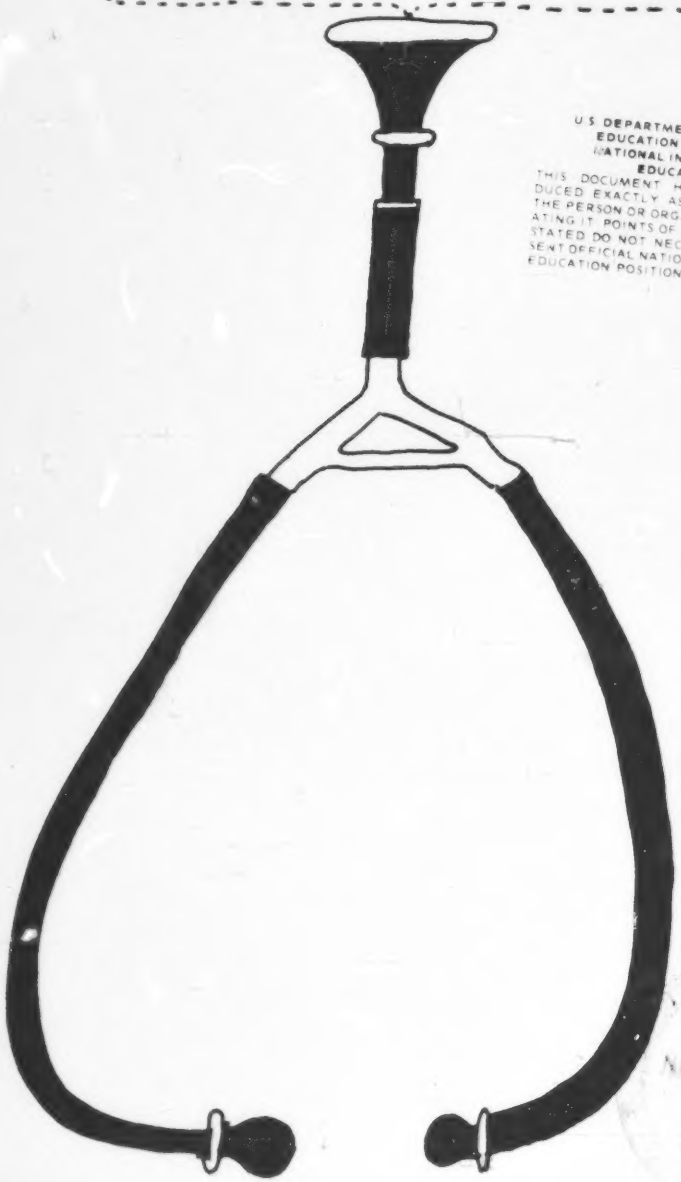
ED100558

Physicians and Physician Services in Rural Washington

Sam M. Cordes Paul W. Barkley

Bulletin 790

Washington Agricultural Experiment Station



U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

NOV 24 1974

RC008248

0002

SUMMARY

This bulletin reports a study made to better understand the physicians serving rural Washington. Another goal was to determine if physicians' services could be increased by taking physicians out of their traditional solo practitioner roles and placing them in groups of two, three, or four doctors. The impetus for this study was from a general feeling expressed by Washington's rural citizenry that rural areas are short of physicians and that health care in these areas is inferior to care available in urban regions.

The study included 41 general practitioners in 17 practices in 15 communities throughout Washington. The communities had 10,000 or fewer people. Practices ranged from single practitioners to 4-physician groups and were within 15 miles of a hospital.

In general, the physicians interviewed had the following characteristics:

1. Those in group practices were somewhat younger than their colleagues in solo practices.
2. Most respondents had lived in small towns during their formative years.
3. More doctors had lived in Washington before their eighteenth birthday and had served internships or residencies in Washington than in any other state.
4. The doctors were relatively immobile, tending to remain in the community in which they first established their practice.
5. The physicians' decisions to practice in their present communities were largely based upon personal and professional considerations, although economics had some influence.

Most advantages of group practice were related to increased professionalism and improvements in the doctors' working conditions. Doctors believed these factors resulted in superior care for the patient. The disadvantages were more subjective in nature and concerned relationships between the doctor and patient and among doctors. Additional inquiry is needed to clarify this issue and to ascertain patients' opinions on the advantages and disadvantages of grouping physicians.

Such capital items as x-ray equipment and laboratories owned by the physician may or may not increase the number of patients a physician can treat. The cost and return structures of the 17 sample practices show that net annual returns per physician do not automatically increase as doctors are added to the practice. Solo practitioners in this study had higher net incomes than doctors practicing in the two- and three-man groups. When four doctors practiced together, net returns increased to substantially above the levels enjoyed in any other practice setting.

Physicians practicing alone incurred substantially more costs than those in two- and three-man groups but the four-man groups had relatively high costs. Reasons for these erratic results can be traced to the problems associated with the indivisible nature of some essential capital and labor inputs and the size and array of facilities provided in the doctor's office.

INTRODUCTION

Many residents of rural Washington have become concerned about the availability of health care and the way such care is distributed. Some of this concern is well-founded. In 1970, Washington's most heavily populated counties, King, Pierce, Spokane and Snohomish, had 144.8 active private physicians per 100,000 population. The state's 8 counties with populations below 10,000 had only 60.1 actively practicing private physicians per 100,000 population. The problem in these nonurban counties is compounded by long distances to a doctor's office. In rural areas, especially in the sparsely populated agricultural and forested regions, a doctor can easily be hours away. Since farming, forestry, and mining are hazardous occupations, it is understandable why rural residents are concerned about the availability of physician services.

This bulletin reports a study of physicians now practicing in Washington's rural areas.

CONDUCTING THE STUDY

This study is based on one fundamental but normative presumption: the availability of physicians' services in rural Washington should be increased. Apparently this goal can be reached by at least two ways. One is to provide more physicians. A second is to encourage physicians to group together so that economies of scale can be realized in the production of some services.

Attracting more doctors to an area is a well-understood method but before policies can be made to accomplish this goal, much more must be known about the physician himself. The needed knowledge includes the way he relates to the rural community, how he views his practice of medicine, and what aspirations he has. This problem was approached by direct personal interview of 41 physicians now practicing in rural portions of the state.

Economies of scale is a well-established principle stating that as workers producing similar products are grouped together, they can increase their productivity by sharing specialized equipment and by having different workers specialize in different tasks. For example, physicians might realize such economies by grouping doctors into practices where two, three, or four physicians could hire a bookkeeper to relieve the physicians of onerous record keeping. The physician would then be free to see more patients and could increase the supply of physician services.

0003

However, the applicability of the economies of scale concept to physician services it not always clear-cut. For example, the grouping together of two or three doctors might allow them to afford an X-ray machine, which a doctor practicing alone (a solo practitioner) could not afford. It can be argued that the use of the X-ray equipment would provide faster diagnosis and would relieve the physician of having to wait for results of a diagnosis referred to an X-ray specialist. But it might also require that the doctor himself spend valuable time operating the machine and consequently leave less time for direct patient care.

To learn more about economies of scale and its applicability to the delivery of health care in rural areas, the 41 physicians who provided personal data were also asked to provide data regarding hours worked, number of patients seen, and the economic structures of their practices. These practices ranged in size from solo practices to four-man groups.

Selection of the Sample

Physicians are very busy people with full, erratic, and overwhelming schedules. Yet to meet the needs of this inquiry, the cooperation of practicing physicians was required. The support of the Washington Medical Education and Research Foundation and the President of the Whitman County Medical Society was enlisted to insure this cooperation and to insure consistency in the desired information. The former office aided in screening all of Washington's rural physicians in order to isolate those meeting three criteria:

1. The practice had to be in a rural community of no more than 10,000 poulation.
2. The practice could not be more than 15 miles from a hospital.
3. The practice had to be staffed only by general practitioners (GPs).

The requiremen that all practices be near a hospital was established for two reasons. First, the proximity of a hospital may influence the effectiveness of a physician as he engages in direct patient care. A doctor practicing far from a hospital may feel compelled to provide certain facilities and services that would otherwise be provided by the local hospital. Secondly, it was reasoned that doctors far from a hospital spend a disproportionate amount of time traveling to and from the nearest hospital. Such time in transit makes it harder to estimate the number of hours worked and to measure other variables affecting physician productivity.

The third criterion, that all selected practices include only GPs, was introduced because GPs are the main source of physician services in rural areas. In addition, it was assumed that this constraint would ensure a certain uniformity among doctors and practices in the sample.

The screening process had one more function. It had to determine the size of the group in which a physician practiced. Solo practitioners and groups of two, three, and four physicians were wanted for the study. After close screening to eliminate "unusual" practices, a list including one group of more than four doctors, seven four-man groups, nine three-man groups and seven two-man groups remained.

Unusual practices included those in which one or more of the physicians was semiretired, those that had recently expanded by adding a new doctor, and those who had a Medex or other paramedical professional affiliated with them. Any of these situations would alter the cost and performance structure of the practice enough to damage comparability among practices.

Solo practitioners satisfying the three selection criteria appeared to be relatively abundant. Five practices in each of the four organizational settings were selected: five solo practitioners, five two-man practices, five three-man practices and five four-man practices.

Physicians in some of the practices selected for study were unable to participate in the inquiry. However, cooperation was eventually enlisted and the needed data gathered from five solo practitioners and four practices in each of the three remaining size groups. This selection yielded 17 practices and 41 individual physicians. They were interviewed between November, 1971 and April, 1972.

THE PHYSICIANS

The 41 physicians were in 17 practices in 15 communities throughout Washington. Eleven practices were in towns east of the Cascade Mountains; six were in towns west of the mountains. The physicians were in 12 counties that taken together had an average of 72.2 medical doctors (MDs) per 100,000 population. This is well below the national average of 121.8 MDs per 100,000 population and only slightly above the 60.1 physicians per 100,000 population found in Washington's eight least populous counties.

Most solo practitioners were in the more remote areas. The nearest any solo practitioner was to a Standard Metropolitan Statistical Area (SMSA) was 49 miles. On the other hand, four of the group practices were located within 20 miles of an SMSA. Washington has six SMSAs: Seattle, Tacoma, Spokane, Everett, Vancouver, and Yakima.

Five of the practices were in communities without hospitals. However the longest distance between a sample practice and a hospital was 14 miles.

Personal and Professional Characteristics

The average age of the physicians was 51 years; those in group practices were slightly younger than the solo practitioners (table 1). The age differential may be due to the growth and acceptance of group practices among physicians during the last 20 years. The older solo practitioners had likely started their careers as physicians before grouping became a major trend in the medical profession.

Data in chart 1 lend mild support to the contention that those in medicine and health-related industries pass occupations along from father to son. Seven of the 41 doctors (17%) were sons of physicians, dentists, or phar-

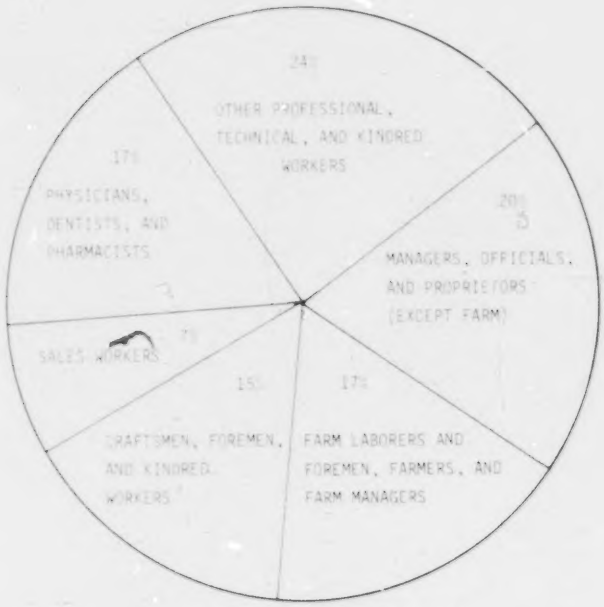
0004

BEST COPY AVAILABLE

Table 1. Age in years of physicians in the sample[a]

Size of practice	Number of physicians	Range in age Low	High	Average age
Solo practitioners	5	47	68	56
2-man groups	8	37	58	49
3-man groups	12	32	60	48
4-man groups	16	34	64	52
All physicians	41	32	68	51

[a]Age reported as of enumeration date.



1. Occupations of fathers of physicians in the sample.

macists. Nearly one-fourth of the physicians came from families supported by nonmedical professional or technical workers. Fathers of the sample physicians tended to have been in occupations of generally high socio-economic status. Over 60% of the fathers were physicians, dentists, pharmacists, technical or professional workers, managers, officials, or proprietors. Others in the sample came from homes supported by fathers in a wide variety of occupations.

Nearly three-fourths of the doctors had lived in places of less than 10,000 population before their eighteenth birthdays (table 2). Many of the physicians had lived in several locations during childhood. Twenty had resided in Washington State for at least part of their childhood or adolescence. Twenty-two had lived in other states and seven had resided in foreign countries.

Of the 41 physicians in the sample, 4 had received their M.D. degrees from the University of Washington, the state's only medical school (table 3). This is a rather small proportion, considering the number of physicians who had lived in Washington prior to their eighteenth birthday. A partial explanation is that 19 of the 41 doctor-

Table 2. Places of residence before physician's eighteenth birthday

Population and location of community	Number
Population of community[a]	
Less than 2,500	15
2,500 - 9,999	15
10,000 - 24,999	4
25,000 - 49,999	2
50,000 - 99,999	2
100,000 - and over	12
Unclassified responses[b]	10
Total	60[c]
Location	
Washington	20
States other than Washington	22
Foreign countries	7
Total	49[c]

[a]Based on official census figures for the decennial year closest to the physician's birth year plus 9 years. This provides a rough estimate for population of the town of residence during the birth-18 year age.

[b]Primarily foreign places of residence.

[c]Some physicians had resided in more than one locale.

had graduated from medical schools before 1950, the year the University of Washington graduated its first class of medical students. Although only 10% of the doctors were graduates of the University of Washington Medical School, 40% had served internships in Washington.

Internship is required of all MDs. Young physicians often undertake additional training in the form of a residency. Sixteen of the doctors in the sample had residency training and more of the residencies had been served in Washington than in any other state (table 3).

The most prevalent type of residency training was surgical; general practice ranked second. The physicians

Table 3. Location of medical training, internship, and residency

Location	Medical school	Internship	Residency[a]
	Number		
Washington	4	17	4
Oregon	8	6	2
Other states	22	10	5
Foreign countries	7	4	5
No response	0	4	2

[a]Sixteen of the 41 MDs in the study had received residency training. Two of them served residencies in more than one state.

BEST COPY AVAILABLE

who had undertaken specialized surgical residencies did not consider themselves specialists. They felt their practices and case mixes were generally comparable to the typical general practitioner's.

Twenty-two of the sampled physicians had not practiced in any community other than their present one. Nearly 60% of the physicians interviewed had been practicing in their present location for more than 15 years (table 4).

Table 4. Years practicing in present community

Years	No. of physicians
5 years or less	5
6–10 years	6
11–15 years	6
16–25 years	18
over 25 years	6

Most, 35 of 41, planned to continue practicing in their present locales. Two of the remaining six doctors were uncertain about future plans; and two did not expect to move but were planning to retire from active practice. Of the 19 doctors who had practiced in other communities, 8 had not practiced in Washington before; 8 had practiced only in other communities in Washington; and 3 had practiced in other states *and* in other Washington communities. There is no positive association between the number of communities in which a physician had practiced and his age. A greater percentage of those 50 years of age and under had practiced in 2 or more communities than had those over 50 years of age.

Table 5 shows why physicians chose their present locales. Although most of the reasons given were personal or professional, economics did influence the decisions. The most frequent reason, personal preference for the general area, was mentioned by 71% of the physicians. Economic reasons were given by 39% of the respondents. "Preference for the general area" differed from "personal ties to the community" in that the latter category referred to family and childhood attachments to the particular community in which the physician was now practicing. Apparently, family ties were much less important than personal preferences in deciding where to practice.

Table 5. Reasons for choosing to practice in present community

Reason given	Number[a]	Percentage of total sample (N=41)
Personal ties to community	7	17
Personal preference for general area	29	71
Professional appeal of the community[b]	15	37
Influenced or recruited by individuals within the community	12	29
Economic reasons	16	39
Other reasons	4	10

[a]Sums to more than number of respondents since some physicians gave more than one answer.

[b]Category includes such reasons as "suitable place for using medical skills" and "more independence in rural practice."

Opinions Regarding Present Practice

Tables 6, 7, and 8 summarize the physicians' opinions regarding their present practices. General practitioners in rural areas are expected to deal with a variety of medical and nonmedical problems. The GPs in this sample found this variety challenging and rewarding. Over 40% of the respondents mentioned this variety and challenge as being an enjoyable aspect of their work (table 6).

Other frequently mentioned sources of enjoyment were the favorable working conditions and the type of community in which the practice was located. Financial rewards were not often mentioned as an enjoyable aspect of the practice. Nor was low income often listed as a frustration stemming from the practice. It appears that the doctors were satisfied with their income and most of their job satisfactions were not derived from economic considerations.

By far the most cited source of physician frustration (table 6) was the excessive amount of work and respon-

Table 6. Opinions regarding present practice

Questions or opinion	Number
What do you enjoy about your present practice?	
Variety and challenge of medical problems confronted	18
Favorable working conditions of practice[a]	18
Type of community in which practice is located	15
Compatibility and personal relationship with patients	11
General satisfaction of medicine and relating to people	7
Financial rewards	4
No response	2
Total responses	75[b]
What do you find frustrating about your present practice?	
Excess work, responsibility, demands, and expectations by patients and community	27
Too much paperwork, government regulations, and medical abuses	8
Medical isolation and limitations of facilities	6
Incompatibility with certain patients	6
Personal disadvantages of small town living	3
Other reasons	6
No frustrations	1
Total responses	57[b]

[a]Category includes such diverse responses as "closeness of office to home," "compatible partners," and "opportunity to do surgery that physician would be expected to refer to specialists in larger cities."

[b]Sums to more than number of respondents since some physicians gave more than one answer.

0006

BEST COPY AVAILABLE

sibility demanded by his patients and by the community. This problem was mentioned more than three times as often as any other problem. The physicians' frustrations with the overall burden of their workloads are consistent with their responses about the size of their caseloads. Specifically, 61% of the doctors felt their caseloads were too large and 37% felt they were the right size. One doctor said his caseload was too small.

Tables 7 and 8 present the professional view of the medical needs of the communities. About one-fourth of the doctors mentioned that more physicians were needed in the local community (table 7). One-fifth mentioned the need for improved hospitals and supporting facilities. Most of the remaining needs the physicians mentioned concerned specific problems and specific groups of people.

For example, the medical needs of the poor, immobile, and elderly were mentioned as pressing needs of the communities. Similarly, the lack of programs, personnel, and treatment facilities for those with personal and mental problems appeared as a pressing need. Three physicians said the most pressing medical needs were better cooperation and coordination among existing local doctors and five doctors felt the medical needs of their communities were being adequately met.

Thirty-four doctors believed their communities could financially support an added physician. One of the ten physicians who listed an additional doctor as a pressing community need did not feel his community could financially support the added physician. Needing but not being able to support another doctor illustrates the difference between "needs" as defined by health professionals and the "effective demand" generated by the community. Needs are being judged by using some health care standards or some reference to the responding physician's caseload. Effective demand depends on the community's ability to pay for the services it needs. For example, in low income areas, medical care needs may be quite high but the lack of purchasing power in the area will limit the amount of medical care services that can be profitably supported by patients.

Of the 34 doctors feeling their communities could support another doctor, most felt only one or two additional physicians could be added to the number already practicing in the area. Most respondents felt that added medical workers should be GPs (tables 7 and 8). The strong preference for GPs was not surprising, considering the smallness of the communities in the study.

Physicians' Assessments of Medical Care in Rural Washington

Numerical information is crucial in making judgments on the adequacy of medical care services in rural areas. So are the views of those delivering these services. Therefore, the sample physicians were asked to compare the medical care delivered in either their own community or in rural Washington, with that delivered in the state's urban regions. Of the 36 doctors willing to make such a comparison, 8 felt medical care in urban areas was superior, 16 believed urban care was inferior, and 12 thought there was no significant difference between urban and rural medical care.

The physicians who made comparisons on the basis of rural Washington were, in general, much more likely to state that urban medical care was superior than those who based their comparisons on their own communities. This suggests that there may be a tendency to not fault the care delivered in one's own community.

The doctors who felt the care in urban Washington was either inferior or superior to the care provided in their own community or in rural Washington were asked why they felt as they did. Their responses are summarized in table 9.

Table 7. Opinions on medical needs of community

Selected questions	Number
What are the most pressing medical needs in your community?	
More doctors	10
More adequate hospital and ancillary facilities	8
Programs, personnel, and/or facilities to meet the needs of:	
The poor and immobile	7
The elderly	4
Those with personal and mental problems	5
Better cooperation and coordination among doctors	3
Other needs	4
Needs are adequately met	5
No response	1
Total response	47[a]
Under present conditions could your community financially support another physician?	
Yes	34
No	7
Number of additional physicians community could financially support	
None	7
One	10
Two	18
Three	4
Four or more	1
No response	1

[a]Sums to more than number of respondents since some physicians gave more than one answer.

Table 8. Type of doctor(s) community could financially support

Type of doctor(s) most appropriate to community needs	Number	% of physicians feeling their community could financially support another doctor (N=34)
Only GPs mentioned	23	68
Only specialists mentioned	3	9
GPs and certain specialists equally appropriate	7	21
No response	1	3

0007

BEST COPY AVAILABLE

Table 9. Reasons for feeling urban medical care is superior or inferior

Selected questions	Number[a]
[illegible] (N=16)	
Less personalized care	7
Doctors and facilities are less responsive to patients' needs	7
Less cooperative and coordinated medical community	3
Other reasons	6
No reason given	1
Total responses	24[a]
[illegible] (N=8)	
More doctors	6
More continuing education and professional stimulus for urban doctors	3
Less problems of time and distance	2
Superior facilities	2
Total responses	13[a]

[a]Sums to more than number of respondents since some physicians gave more than one answer.

Table 10. Suggestions for improving medical care in rural Washington

Nature of suggestion	Number
Increase the supply of doctors and paramedical personnel	12
Measures to alter the geographic distribution of doctors	9
Expansion of the MEDEX program	8
Better medical facilities	7
Provision of specialists on a rotating basis	5
More health education for rural citizens	4
More continuing education for rural doctors	3
Other reasons	6
No opinions	6
Total responses	60[a]

[a]Sums to more than number of respondents since some physicians gave more than one answer.

In broad terms, those who felt medical care in urban areas was inferior thought that urban medical care is delivered using an insensitive, impersonal, and awkward system (table 9). Those who felt urban care to be superior believed there were quantitative or technical advantages of urban location. For example, they felt that the greater concentration of doctors and the shorter times and distances in urban areas permitted patients in these areas to reach a doctor's office or hospital faster than in rural areas.

The physicians' suggestions for improving medical care of Washington's rural citizens are in table 10. The three most frequently mentioned ideas were:

1. Increase the supply of doctors and paramedical personnel. (*Paramedical personnel* refers to the physician's medical support personnel and includes nurses, medical secretaries, and laboratory assistants.)
2. Alter the geographic distribution of physicians.
3. Expand the MEDEX program. The suggestion relating to expansion of the MEDEX program is an honest extension of the suggestion to increase the supply of doctors and paramedical personnel. The MEDEX program is explained in more detail in the appendix.

Most of the suggestions for improving medical care in rural Washington dealt with increasing the number of medical care personnel rather than with reorganizing the present personnel into different types of practice arrangements such as group practice.

Physicians' Opinions and Group Practice

A major objective of this study was to inquire into the advisability of group practices and into the possibility that grouping physicians together might increase the supply of physician services in rural areas. To learn more about the issues surrounding group practices, the physicians were asked several questions regarding the relative merits of solo and group practice. Tables 11 through 16 summarize their responses. Table 11 shows that the doctors were about evenly divided on whether more patients could be seen per hour in group practice or in solo practice. Thirty-two doctors (31 of whom were in groups) felt group practice enhanced the quality of medical care. Only three felt quality would decrease when physicians were grouped together.

Most of those doctors saying group practice enabled the physician to see more patients per hour believed that group practice:

Table 11. Doctors' opinions regarding efficiency and quality associated with group practice

Question and response	Number responding
[illegible] group practice enable a physician to see more patients per hour?	
Yes	15
No	15
Maybe	6
No response	5
[illegible] group practice improve the quality of medical care?	
Yes	32
No	3
Maybe	3
No response	3

0008

BEST COPY AVAILABLE

1. Provided superior paramedical labor and more division of labor.
2. Provided superior ancillary facilities.
3. Allowed more flexibility in physician workloads and patient scheduling (table 12).

Table 12. Reasons for expecting efficiency gains in group practice

Reasons given	Number (N=21)
Superior paramedical labor with a greater division and specialization of labor	13
Superior ancillary facilities	6
More flexibility in workload, patient scheduling, etc.	6
Other reasons	4
No reason given	1
Total responses	30[a]

[a]Sums to more than number of respondents since some physicians gave more than one answer. N=21 because this question was asked of only those physicians who thought grouping would bring greater efficiency.

Clearly, items 1 and 2 are closely related and refer to the capacity of the group practice to employ more labor and more sophisticated diagnostic or treatment facilities. The efficiencies in scheduling may be important, too, but their impact on the physician's ability to see more patients is less clear. The main qualitative advantages of group practice were the greater opportunity for specialization, consultation and the exchange of knowledge among physicians (table 13). Twenty-five doctors gave this reason.

Table 14 reports responses to questions asked first of the solo practitioners, then of those practicing in groups.

Table 13. Reasons for expecting quality advantages in group practices

Reasons given	Number[a] (N=35)
Greater opportunities for specialization, consultation, and exchange of knowledge	25
Stimulation and peer review by partners	7
Complete and continual care for patients	6
More free time to reduce physician fatigue and allow for more continuing education	6
Superior facilities and supportive help	4
Other reasons	2
No reason given	2
Total responses	52[a]

[a]Sums to more than number of respondents since some physicians gave more than one answer. N=35 because this question was asked only of those physicians who actually expected quality advantages from group practices.

Because only five solo practitioners were consulted, the responses may or may not represent what most solo practitioners think.

The solo practitioners in the sample felt that moving into group practice would reduce the length of the work week and the number of patients seen (table 14). These responses were consistent with the opinions of group practitioners who felt that moving into solo practice would increase both the hours worked and the number of patients seen per week.

Opinions on whether group or solo practice would increase income varied. Three of five physicians in solo practice thought group practice would increase their incomes. A plurality of physicians in group practice in effect disagree; 14 of 36 thought they would make more money in solo practice. Eight believed that solo practice is less profitable, but 14 thought there was no difference, or did not answer the question.

Table 14. Opinions on the impact of group practice on selected variables

Variable	Number
As a solo practitioner, if you were to practice in a group practice what changes would you expect in:	(N=5)
Hours worked per week:	
An increase	2
A decrease	3
Patients seen per week:	
An increase	1
A decrease	3
No change	1
Annual income:	
An increase	3
A decrease	1
No response	1
As a group practitioner, if you were to practice in a solo setting, what changes would you expect in:	
Hours worked per week:	(N=36)
An increase	19
A decrease	5
No change	8
No response	4
Patients seen per week:	
An increase	14
A decrease	8
No change	10
No response	4
Annual income:	
An increase	14
A decrease	8
No change	9
No response	5

BEST COPY AVAILABLE

Solo practitioners seem to feel that affiliating with a group would simultaneously reduce work loads and increase incomes. Group practitioners may be more realistic. Over half expect they would work harder and 39% expect they would earn higher incomes if they transferred to solo practice.

Physicians realize that grouping will affect both doctor and patient. Moreover, these effects divide into advantages and disadvantages to the two groups (see tables 15 and 16). Table 15 refers to the physicians' opinions about good and bad effects of grouping *on the doctor*.

In an era of growing emphasis on medical consumerism, it is important to keep in mind that this study deals only with the opinions of medical providers—namely physicians. There is no reason to expect that medical consumers (patients) and providers hold similar views on the issues considered in this study.

All but one of the responding doctors mentioned more free time for continuing education and leisure as a distinct advantage of a group practice. Other frequently mentioned advantages to the doctor were greater opportunities for specialization, consultation, exchange of knowledge and increased efficiency. Some physicians believed group practice created economic disadvantages for the doctor—lower income and greater financial responsibility for the liabilities of partners.

Increased liability refers to the possibility of all doctors in a group suffering financial difficulties as a result of malpractice actions against only one in the group. This item was cited much less often than the possibility of incompatibility among doctors or loss of professional independence and individualism.

The doctors believed the major advantages of group practice *to the patient* were easier accessibility to complete and continual care and superior quality of care. The doctors said that disadvantages of group practice for the patient include restrictions on the choice of a physician and disruption of the doctor/patient relationship (table 16).

This supposed disadvantage to the patient, restrictions on free choice of doctor, conflicts with an often mentioned advantage of group practice—easier accessibility to complete and continual care. That is, according to the sample doctors, the patient who has his medical problems attended to by a group practice may find it easier to see a doctor and the doctor he sees will have ready access to the patient's medical records and medical history. But the patient may not always be able to see the doctor he prefers.

The problems of choice in physicians and disruptions in the doctor/patient relationship were not mentioned as a disadvantage to the doctor. This is contrary to a frequent argument that a strong doctor/patient relationship

Table 15. Physicians' opinions regarding advantages and disadvantages of group practice to the physician

Advantages or disadvantages	Number (N=41)
Advantages of multi-physician practice to the physician	
More free time for continuing education and leisure	37
Greater opportunities for specialization, consultation, and exchange of knowledge	23
Increased efficiency and other economic advantages	15
Stimulation and peer review by partners	6
Superior facilities and supportive help	4
Other advantages	2
No response	3
Total response	90[a]
Disadvantages of multi-physician practice to the physician	
Incompatibility among doctors	23
Loss of professional independence and individualism	12
Less income and more responsibility for financial and status liabilities of partners	5
Other disadvantages	5
No disadvantages	4
No response	3
Total response	52[a]

[a]Sums to more than number of respondents since some physicians gave more than one answer.

Table 16. Physicians' opinions regarding advantages and disadvantages of group practice to the patient

Advantages or disadvantages	Number (N=41)
Advantages to patient	
Easier access to complete and continual care	26
Superior care due to:	
Consultation among doctors	18
Availability of supporting help and equipment	11
No specific reason	3
Opportunity to choose among physicians	8
Less expensive care	4
Other advantages	2
No response	6
Total responses	78[a]
Disadvantages to patient	
Restriction on choice of physician	17
Disruption of patient/doctor relationship	12
No disadvantages exist	7
Other disadvantages	5
No response	6
Total response	47[a]

[a]Sums to more than number of respondents since some physicians gave more than one answer.

0010

is at least as important to the doctor as it is to the patient. Moreover, all of the group practice advantages accruing to the physician were also considered to be advantageous to the patient.

Apparently, doctors believe both groups share the same advantages. The fact that benefits for doctor and patient are the same does not necessarily mean that the total advantages of group practice exceed its total disadvantages. Table 16 reports a disagreement related to the choice of physicians. Eight respondents said group practice was *advantageous* to patients because it gave the patients an opportunity to choose among several physicians. However 17 respondents suggested that the group practice was *disadvantageous* to the patient because it *restricted* his choice of physicians.

Another 12 respondents were concerned that the group practice might disrupt the relationship between doctor and patient. All named disadvantages to the patient centered on the personal affiliation between doctor and patient. No technical reasons were mentioned.

BUSINESS ORGANIZATION AND ECONOMIC PRODUCTIVITY OF THE SAMPLED PRACTICES

The *practice* is the business organization the doctor uses in producing his services. It can be very simple—an office with scarcely more than an examining table and a few instruments. Or it can be extremely complex, including nurses, receptionists, laboratory facilities and complicated diagnostic equipment.

All but 1 of the 12 group practices were organized as formal partnerships. The one exception was organized as a corporation. The basic accounting arrangement in the group practices was for all revenues and all expenses to be shared in an explicit fashion. In six groups, the physician-members shared revenues and expenses equally. In the other six groups, the sharing arrangement was related to either seniority of the doctors or to the contribution each physician was making to the total revenue of the practice. Work load was apparently considered only insofar as it contributed to total revenue.

Before conclusions can be drawn regarding the effects of practice size on the supply of physician services in rural Washington, various classes of resources used to produce services and various kinds of services themselves must be defined and measured. The focus of this study was the physician services produced in the doctor's office.

In general, resources (inputs) used to produce these services include capital, the physicians' labor, acquired labor, and normal operating needs such as telephone, insurance, and medical and office supplies. Outputs of a physician's office are extremely hard to standardize and quantify. In this study, output is defined as the number of patients the doctor treats in his office (office visits).

Certainly, the type of treatment varies among office visits. Minor surgery conducted in the office is a different type of office visit from soaking a sprained finger or consulting on a dietary problem. However, if it is assumed that the *proportions* of specific medical needs treated are roughly similar among doctors, the use of the office visit as a standardized measure of output is valid for comparing practices. Such an assumption has been made and is defensible on the grounds that all doctors in the study were somewhat homogeneous (all were GPs) and served similar rural populations.

Physical Measures of Inputs and Outputs

Different physical measures of the physicians' input and output levels are in table 17. The doctor's input is measured by the amount of time he spends in routine professional activities. Routine activities are professional tasks directly associated with the practice of medicine. These tasks include physician time spent in direct patient care, in X-ray and laboratory work, in administrative and clerical functions, consulting with other doctors, and routine professional reading and study.

His output is defined by the number of patients seen in his office per unit of time. All physicians taken together spent an average of 46.7 weeks per year in routine activities associated with their medical practices. Deviation about this average was very slight.

Doctors in 2-man groups had the shortest working year (45.5 weeks). Solo practitioners spent the most time at their jobs (47.9 weeks per year). Solo practitioners also spent more hours per week in routine work (67.3 hours) than did physicians in the group practices (60.3 hours per week). As in the case of weeks per year, the 2-man groups had the shortest work week (55.7 hours) of any group studied. The longer time spent in routine professional activities by solo practitioners is consistent with the earlier mentioned opinions that time demands are generally greater among those in solo practice.

One might hypothesize that the longer time per year spent in major professional meetings and conventions by group practitioners (table 17) is also related to more emphasis on "professionalism" encountered when practicing under the influence, stimulation, and observation of peers. This hypothesis is supported by the fact that as the size of the group increased, the percentage of doctors holding memberships in the American Medical Association and in the American Academy of Family Physicians also increased.

The heavy work schedule for solo practitioners and the relatively light work schedule for doctors in two-man practices is perhaps partially explained by differences in population bases served by the sample settings. The solo practitioners were in towns and counties with the fewest doctors per 100,000 population while the four 2-man groups in the sample were in towns and counties with the largest physician to population ratio in the study.

The 41 physicians in the study conducted an average of 6,328 office visits pear year. Physicians in 4-man groups appeared to be most productive; they averaged 7,383 office visits per year and 152 office visits per work week (table 17). The two-man groups, perhaps because of the smaller population base served, appeared to be

0011

BEST COPY AVAILABLE

Table 17. Physician input and output, by size of practice, 1970

Measures of input and output	All physicians[b] (N=39)	Solo practitioners (N=5)	Physicians in 2-man groups (N=8)	Physicians in 3-man groups (N=11)	Physicians in 4-man groups (N=15)
Average number of weeks spent:					
In routine activities	46.7	47.9	45.5	46.1	47.4
In major professional meetings, conventions, etc.	2.0	1.2	2.1	2.7	1.7
On vacation	3.3	2.9	4.4	3.2	2.9
Average number of hours of routine work week spent in:	(N=41)	(N=5)	(N=8)	(N=12)	(N=16)
Physician's office	36.1	37.5	35.4	35.3	36.5
Hospital and nursing home (excluding travel time)	18.0	20.1	14.0	16.4	20.5
Patient's home (including travel time)	1.1	.8	1.3	1.1	1.1
Physician's home	6.0	8.9	5.0	7.2	4.7
Total hours in work week	61.2	67.3	55.7	60.0	62.8
Average number of office visits per physician:	(N=39)[a]	(N=5)	(N=8)	(N=11)	(N=15)
Per year	6,328	5,464	5,023	5,774	7,383
	(N=41)	(N=5)	(N=8)	(N=12)	(N=16)
Per week	135	136	111	130	152
Per physician hour in office	3.87	3.69	3.18	4.02	4.16
Per physician hour in direct patient care in office	5.55	4.96	4.62	5.66	6.11

[a] Five of the doctors in three-man groups were unable to estimate the amount of time spent in direct patient care. The percentage of total office hours spent by the remaining 36 doctors on direct patient care was used to estimate this variable for these five doctors.

[b] Two doctors were excluded from this table because they joined the practice during the study year.

least productive. They saw an average of only 5,023 patients per physician per year.

The number of office visits per year is a measure of the total supply of physician services available to a community but it does not consider the differing amounts of time physicians spend in their offices. When placed on a per time unit basis, a somewhat different picture emerged. When the number of annual office visits was divided by hours the physician spent in the office, productivity per hour generally increased with size of practice. The two-man group was an exception; it had the lowest productivity per hour of any organization. Doctors in four-man groups produced about 13% more office visits per hour than solo practitioners.

A more pronounced trend emerged when productivity was measured by office hours spent in direct patient care (table 17). Using this measure, doctors in four-man groups produced 23% more office visits than solo practitioners. As before, the two-man groups stood apart from the trend. Again, this perhaps is due to their location in towns and counties with more doctors per 100,000 population. Apparently, because of this lower physician to population ratio, physicians in the two-man groups were able to perform their office work at a more leisurely pace.

Doctors in four-man groups had the most office visits per year, per week, per physician hour in office, and per physician hour in direct patient care while in their offices (table 17). Doctors in three-man groups had a higher productivity per office hour and per office hour in direct patient care than did the solo practitioners but solo practitioners produced more office visits per week and per year than three-man groups. The reason for this is not hard to find. The average solo practitioner worked more weeks per year, spent more hours per week in his office, and spent more office hours in direct patient care than physicians in three-man groups.

The lack of consistency in productivity among practice sizes raises a fundamental issue. The physician's incentive to enter group practice is often based on the prospect of increasing hourly productivity so more leisure and more time for continued education will be available. Such a move may benefit the doctor but does society benefit if this results in less total output per year?

If the strict criterion of maximum output per unit of physician time is chosen, the greater hourly productivity is to be preferred. If increased hourly productivity comes at the expense of lowered annual productivity, it can be argued that the potential of group practice for lessening the scarcity of physician services is not being realized. This need not be an either/or situation. The doctors in the four-man practices, for example, produced more office visits per year than the solo practitioners even though they worked fewer hours per year. The two- and three-

0012

man groups were not so productive on an annual basis.

In addition to total yearly output, the quality of care must be considered. Physicians felt quality was enhanced by grouping because it allowed an increase in leisure time, easier consultation with other physicians and it permitted more participation in continuing education. Unfortunately, the study did not provide substantive insights into the validity of these assertions.

Reasons for the Varying Output Per Unit of Time

Economic reasoning indicates that doctors practicing in groups will be more productive because they have more capital resources (e.g., equipment and facilities for diagnosis and treatment) in their offices and they enjoy a greater division and specialization of labor (e.g., nurses to give inoculations and bookkeepers to do the billing).

Doctors in the four-man practices apparently do have more capital equipment (fixed office expense in table 18) and hired labor per physician than physicians in other practice sizes. Doctors in two-man practices had the least capital and hired labor per physician. Solo practitioners had more capital facilities at their disposal than those in two or three-man groups but the solo practitioners were relatively less productive on an hourly basis than the doctors in three-man groups.

Production of patient care in a general medical practice appears to be very labor-intensive. For example, about 47% of the average physician's total annual expenses of $29,593 were salaries and wages of office and paramedical personnel. The large proportion of labor expense suggests that there should be considerable potential for the division and specialization of labor as the size of practice increases. That is, considerable efficiency should be gained by grouping physicians so that several can use the same office personnel and nursing staff.

To gain insights into this possibility, physicians were asked to allocate weekly work schedules by the types of tasks they performed (table 19). Solo practitioners spent 7.4 office hours per week in administrative and clerical tasks. This was more than doctors in any other size practice. Moreover, if it is assumed that the administrative and clerical tasks done in the physician's home are related to his office workload, the solo practitioner appears to be further burdened by these tasks. This evidence suggests that the greater opportunity for division and specialization of labor in group practices relieves the doctor of much administrative and clerical responsibility. The released time could be devoted to caring for patients.

Related to this argument is the observation that the three- and four-man groups were much more likely to have a full-time business or office manager than the smaller practices. It appears that in the larger practices, nonphysicians can do administrative and clerical tasks in place of physicians. However, the labor substitution does not appear to take place in the case of laboratory and X-ray tasks. While the absolute number of hours spent performing these tasks is relatively small, solo practitioners spent less than half as much time in laboratory and X-ray work as did doctors in the multi-doctor groups.

This apparent inconsistency can be rationalized. The range of ancillary services tends to increase as the number of doctors practicing together increases. For example, a much larger percentage of group practices than solo prac-

Table 18. Annual expenses by size of practice, 1970

Average expenses per physician[a]	All practices (N=17)	Solo practices (N=5)	2-man groups (N=4)	3-man groups (N=4)	4-man groups (N=4)
Total expenses	$29,593	$31,169	$22,917	$24,700	$39,192
Office and paramedical labor[b]	13,942	13,558	10,098	12,286	19,920
Fixed office expenses[c]	5,682	6,837	3,682	4,540	7,382
Taxes and licenses[d]	684	673	596	609	860
Malpractice insurance	1,510	1,499	1,340	1,654	1,548
Telephone expense	801	885	579	785	933
Contracting of services[e]	1,081	1,503	1,610	183	925
Medical and surgical supplies	3,617	3,947	2,708	2,929	4,802
Admin. and office expenses[f]	2,276	2,267	2,304	1,714	2,822

[a]Expenses based on averages per physician in each of the 17 sample practices. Two of the 41 physicians studied joined their respective group practices during 1970. Consequently, expenses per physician in these two practices also reflect expenses accumulated by the two doctors they replaced.

[b]Includes payroll taxes, unemployment insurance, employees retirement, and other employees benefits.

[c]Includes (1) rent, depreciation, interest, opportunity cost on equity, insurance, repairs, taxes on land, buildings, and equipment; (2) utilities; and (3) custodial labor.

[d]Primarily state business and occupation tax (approximately 1 percent of gross revenue).

[e]Contracting of laboratory and X-ray services and professional fees paid other doctors.

[f]Includes office supplies and postage, legal and accounting services, promotion, laundry, miscellaneous, and professional dues, books, and subscriptions.

0013

Table 19. Hours per week spent in various tasks by place of work and task, 1970

Place of work by task	All physicians (N=36)[a]	Solo practitioners (N=5)	Physicians in 2-man groups (N=8)	Physicians in 3-man groups (N=7)	Physicians in 4-man groups (N=16)
Average number of hours spent in office					
Direct patient care	25.6	27.8	26.3	22.3	26.0
Lab. and X-ray tasks	1.6	.8	2.0	1.9	1.7
Admin. and clerical tasks	5.5	7.4	4.4	4.3	6.0
Consult. with other physicians	1.1	.1	.9	1.5	1.3
Routine reading and study	1.3	1.4	1.8	.1	1.5
Average number of hours spent in hospital and nursing home (excluding travel time)					
Direct patient care	13.1	16.7	7.9	11.6	15.2
Lab. and X-ray tasks	.6	.2	.9	.2	.7
Admin. and clerical tasks	3.1	2.0	3.5	3.2	3.3
Consult. with other physicians	1.2	1.2	.8	1.8	1.0
Routine reading and study	.4	.0	.9	.3	.3
Average number of hours spent in physician's home in	(N=39)[b]	(N=5)	(N=8)	(N=10)	(N=16)
Direct patient care[c]	1.6	1.1	1.6	2.7	1.1
Admin. and clerical tasks	.9	3.7	.9	.8	.2
Routine reading and study	3.5	4.1	2.5	4.1	3.4

[a]Five doctors were unable to allocate hours in office, hospital, and nursing home among tasks.

[b]Two doctors were unable to allocate hours in their homes among tasks.

[c]Primarily phone calls related to patient care.

Table 20. Percent of practices offering selected services by size of practice, 1970[a]

Service	All practices (N=17)	Solo practices (N=5)	2-man groups (N=4)	3-man groups (N=4)	4-man groups (N=4)
Performing minor surgery	100	100	100	100	100
Setting fractures	88	60	100	100	100
Physical therapy	70	100	50	25	100
X-ray	71	40	75	75	100
Electrocardiogram	59	20	75	50	100
Selected laboratory services[b]	51	43	58	38	67

[a]A practice was considered capable of performing a service even if the service was offered on a limited basis.

[b]Laboratory services considered were urinalysis, hematology, cardiopulmonary, pulmonary function, chemistry, and microbiology.

tices could provide X-ray and electrocardiogram services (table 20). With the exception of three-man practices, group practices also appeared to have greater laboratory capabilities. The four-man practices clearly offered the widest range of ancillary services.

It was hoped that the category of expenses "contracting of services" would provide insights into differences in the range of services offered. However, in some cases the central laboratory or hospital providing the service billed the patient directly while in other cases the practice was billed. In the latter case, the practice subsequently billed the patient. Hence, it was not possible to use this expense category as a gauge for the range of services offered by a particular practice.

Added capital equipment requires labor to operate it and some of the more specialized laboratory equipment requires highly skilled labor (e.g., laboratory and X-ray technicians). Some practices, especially the four-man groups, appeared to be large enough to support the major capital fixtures but too small to make effective use of specialized personnel to operate the capital. As a result, the doctors themselves ran the machines. Capital is labor saving for the physician only if it provides him with quicker diagnosis or if it lessens his own labor. In sum,

0014

the capital items used in the sophisticated practice of modern medicine may or may not increase the capacity of the physician to see more patients.[1]

As would be expected, solo practitioners spent virtually no time in consultation with other doctors. Group practitioners, however, made considerable use of the consultative opportunities offered by their colleagues (table 19). The fact that doctors in group practice spent relatively more hours per week in consultation with each other decreased the time they had available to see patients. As with the time spent in laboratory, X-ray, and other ancillary tasks, it can be hypothesized that the time spent in consultation may increase productivity per hour if it permits faster diagnosis.

It has been noted that the greater number of weeks worked per year by solo practitioners appeared to infringe on their ability to attend major professional meetings and conventions. Despite their longer time worked per week, solo practitioners were able to spend a total of 5.5 hours per week in routine professional reading and study (table 19). This figure was comparable to the amount of time physicians in group practices spent in these activities. The extent to which routine reading and individual study can substitute for formal learning experiences is not known.

Economic Features of the Practices

Some cost and revenue data obtained from the 17 sample practices are in table 21. Gross revenue per physician ranged from slightly more than $58,000 per doctor in the two-man groups to over $85,000 in the four-man groups. The average gross revenue for all doctors reporting was $68,210. After deducting annual expenses associated with the practices, average net revenue per physician was $38,617. Doctors practicing in three-man groups had the lowest net incomes ($34,941). Those in four-man groups earned net incomes above $46,000.

Most people like to think that a physician's income is intimately bound up with the extent of activity in his office. Table 21 partially confirms this. Depending upon size of practice, revenue from office visits contributed between 53% and 58% to the practice's total revenue. The remainder came from surgery, laboratory tests, and other sources. The percentage of total revenue from office visits does not appear to be correlated with the number of office visits per year.

The doctors in the two-man practices, seeing only an average of 5,023 patients per year, obtained 56.1% of their revenue from this source; more than the solo practitioners who, on the average, saw more patients. The physicians in three-man groups saw 5,774 patients per year and received 58.1% of their income from this source.

The four-man groups saw the most patients but derived only 55.1% of their revenues from office visits—this in spite of the fact that their charge per visit was higher than those practicing either in solo practices or in three-man groups.

Calculating the cost of producing an office visit is extremely difficult. Many expenses associated with the practice are joint expenses and cannot be allocated accurately to the office visits or to any other single aspect of the physician's activities. Total expenses shown in table 21 do appear reasonable. The solo practitioner has high expenses because of indivisibilities. He must have helpers, and equipment may not be fully used.

Total expenses per physician drop for the two- and three-man groups—likely because of shared costs of specialized equipment. On the basis of tables 18 and 20, it can be inferred that four-man groups offer more ancilliary services than any other size of practice. These ancillary services apparently add significantly to the total expenses of this type of practice.

[1] The tremendous increases in malpractice suits and malpractice insurance rates have induced physicians to be much more cautious in diagnosing (or not diagnosing) particular ills. Care in diagnostics can come through the addition of more sophisticated equipment, even if it means that the doctor himself must operate the machines. The price of this caution is, then, fewer physician hours available for seeing and treating patients.

Table 21. Average expenses and revenues per physician by size of practice, 1970[a]

Size of practice	Fee charged per OV	Number of OVs	Revenue from office visits	Revenue from other sources	Total revenue from all sources[b]	Total expenses	Annual net revenue	Percent of total revenue coming from OVs
All physicians	$6.12	6,328	$38,727	$29,483	$68,210	$29,593	$38,617	56.8
Solo practices	5.72	6,464	36,974	32,288	69,262	31,169	38,093	53.4
Two-man groups	6.50	5,023	32,650	25,501	58,151	22,917	25,234	56.1
Three-man groups	6.00	5,774	34,644	24,997	59,641	24,700	34,941	58.1
Four-man groups	6.38	7,383	47,110	38,413	85,523	39,192	46,331	55.1

[a] Selected economic variable based on averages per physician in each of the 17 sample practices. Two of the 41 physicians studied joined their respective group practices during 1970. Consequently, economic variables per physician in these two practices also reflect the effect on these variables of the two doctors they replaced. All figures are prior to payment of physician's federal income taxes.

[b] Only sources of income related to the medical practice are considered.

0015

DISCUSSION

The question of the extent of a doctor shortage is not an easy one. Opinions regarding "shortages," "needs," and "demands" for physician services are easily found but are hard to authenticate or to understand. Some areas have more physicians per capita than other areas and physicians have left some rural areas to practice in urban locales. Some physicians who have left rural areas have not been replaced. These situations are not, however, proof of *need*. It is not possible to say exactly when a shortage exists and when a community *needs* more physicians, or even when it needs a single physician. Because of the difficulty of determing need, this report is limited to only the most primitive indicators of need.

It has been noted that Washington's rural areas have fewer physicians per capita than the state's urban areas. It is also known that some Washington communities have had physicians but no longer do; there are hospitals without doctors; rural residents often reside many miles from the closest physician; physicians in many rural towns are reaching ages when retirement or semiretirement is inescapable.

These items establish the need for inquiries regarding the production of physicians' services in rural Washington. If rural Washington is not to fall hopelessly behind in the production of physicians' services, some method must be found to increase the availability of such services in the next few years.

Two methods of increasing the supply of services have been discussed here. The first is simply to attract more doctors to an area. This problem is approached by determining pertinent characteristics of rural physicians and by asking physicians what they like and dislike about their present practices. Communities searching for new physicians could capitalize on these results.

It seems clear that many of the physicians in the study had come from towns of less than 50,000 persons. Most had lived in the Pacific Northwest and attended medical school or interned in the Pacific Northwest. Medical schools in Washington and Oregon seem reasonable places for recruitment; students from rural Washington, Oregon, and Idaho, wherever they attend medical school, may also be fruitful objects for a community in search of a doctor.

Communities trying to attract doctors can promise the new doctor a "general practice" in which the doctor can apply his skills to a wide range of medical problems. The work load of a doctor in a rural area is likely to be extremely taxing. The solo practitioners in the study worked an average of 67.3 hours per week, 47.9 weeks per year.

The second method of increasing the output of physician's services in rural Washington is to group doctors. Small group practices with two, three or four physicians working together can share sophisticated equipment and specialized personnel. This arrangement would reduce both the hours worked per week and the weeks worked per year.

While the study did not show that two- and three-man groups would increase the number of office visits per year (that is, the number of patients the doctor is able to see each year), the four-man groups were able to boost office visits rather substantially. Four doctors conducting independent practices would be able to handle 25,856 office visits per year. The same four doctors operating in single group practices would be able to handle 29,532, a 14.3% increase.

While grouping doctors can increase output and relieve some of the burden often placed on solo practitioners, it does raise a major problem of proximity. Rural Washington has low population densities and extreme remoteness—especially in the forest and ranch areas.

If physicians group together, output may increase but patients may have to travel farther for medical attention. This problem becomes more serious when it is realized that agriculture, forestry, and mining are among the high risk and high accident industries in the nation.

This question is one of equity: Whose welfare could receive priority: the patients' or the doctors'? This is not an easy question and it is one that will require much more study and innovation before it can be adequately resolved.

This report has a major limitation. The report deals with *physicians*, not with *health care*. The two must be separated because they relate to two different things and they offer two sets of opportunities for meeting the needs of rural residents. Physicians are assuredly the most important part of the health care system. However, that system also includes dentists, nurses, technicians, hospitals, rest homes, physical therapy units, school nurses, dieticians, and perhaps dozens of others. In many cases, a physician is needed, for only he can do surgery and only he can prescribe certain medicines. Because of this, rural areas need physicians.

However, many health problems are related to the environment of the patient or to his diet. These kinds of problems can be treated by health personnel other than physicians. Moreover, treatment of many health problems can be delayed. Physical examinations can be conducted next week or the week after. Routine innoculations for children can be performed on a "when it's convenient" basis. In these cases, a physician may be needed but his office need not be near the place where such services are rendered. The patient can easily get to the doctor at a time that is convenient for both.

Finally, the broad health care system in the United States functions within a terribly inflexible set of institutions. The doctor and his nurse loosely affiliated with a hospital is a behavioral mode that has persisted without major modification for decades. If health care in its broadest sense or even physician services in their narrowest conceptualization are to be made more available and more accessible in rural areas, much innovation is needed. This innovation will take continued research, much frustration, and perhaps some failures before a truly satisfactory arrangement can emerge.

0016

APPENDIX

The MEDEX Program in Washington

The MEDEX program is designed to help develop new types of paramedical personnel trained to assume a more active role in delivering medical care services. MEDEX come from the French phrase, *medi*cin extension, meaning "physician extension." In most current writing, the program is referred to as the *MEDEX* program while an individual participating in the program is a *Medex*. The program is jointly sponsored by the University of Washington School of Medicine and the Washington State Medical Education and Research Foundation. The purpose of the program is to relieve overburdened physicians of certain routine medical tasks and procedures that can be effectively undertaken by personnel not having the sophisticated training of a physician.

Participants in the MEDEX program are selected from the ranks of corpsmen who have been discharged from the Armed Forces Medical Corps. The program capitalizes on the fact that these individuals have up to 2,000 hours of formal instruction in medical care and up to 20 years experience in providing medical care to military personnel. The civilian training for the MEDEX trainees comes in two phases. The first phase consists of an intensive 3-month classroom session at the University of Washington School of Medicine. Pediatrics and geriatrics— two areas of medicine with which military corpsmen are likely to have had little contact—as well as psychiatry, chronic diseases, physical examinations, and patient history-taking are emphasized during this phase.

After completion of the 3-month curriculum, trainees are placed with actively practicing physicians for a 9-month preceptorship. This is roughly comparable to a physician's training as an intern. This placement is not done randomly, but is made after careful consideration of the personnel and professional aspirations and preferences of the physician, the trainee, and the trainee's spouse. One reason for this careful placement is to maximize the possibility of the trainee's remaining permanently with the doctor who supervises the preceptorship. During the preceptorship the trainee becomes actively involved in patient care but works under close supervision and guidance.

Upon completing the 12-month program, trainees are awarded the title of Medex. Program graduates usually command a starting salary of from $8,000 to $12,000. This salary is paid by the employing doctor. Among the tasks a Medex often performs are screening patients, taking patient histories, conducting simple physical examinations, treating minor injuries, assisting with surgery, and handling certain administrative responsibilities.

The ultimate goal of the program is to increase the quantity of medical care available in needy areas. The potential of the program to meet this goal rests on two interrelated considerations. First, it is hoped that the effective use of Medex will increase the supply of medical care services. Secondly, the strengthening of the physician's supportive staff will hopefully provide relief from the constant and excessive patient demands made on doctors in medically needy areas. If this possibility is realized, these areas will presumably find it easier to attract doctors into their communities or be less concerned about losing their present doctors.

The first class of trainees began the program on July 1, 1969. Since that time, about 65 Medex have been graduated and placed throughout Washington.

THE AUTHORS AND THIS BULLETIN

Sam M. Cordes was a graduate research assistant, department of agricultural economics, Washington State University. He is now at The Pennsylvania State University.

Paul W. Barkley is an agricultural economist, department of agricultural economics, Washington State University.

The bulletin was prepared from material found in Sam M. Cordes, *The General Practitioner in Rural Washington: Opinions, Characteristics, and Comparative Productivity Among Practice Sizes*, unpublished Ph.D. disseration, Washington State University, 1973.

Work was conducted under project 1974.

Drs. James C. Barron and David W. Holland, Department of Agricultural Economics, Washington State University, and Dr. Ralph A. Loomis, RDS-USDA, Pullman, Washington, made helpful comments on early drafts of this manuscript.

Published by the Washington Agricultural Experiment Station, College of Agriculture, Washington State University. January, 1974